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10/015,606	12/17/2001	Hisanori Ehara	31711-177340	5904

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Venable
P.O. Box 34385
Washington, DC 20043-9998

EXAMINER

SUMMONS, BARBARA

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 03/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 10/015,606	Applicant(s) Ehara et al.
Examiner Beverly Summons	Group Art Unit 2817

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE

3 (three) MONTH(S) FROM THE MAILING DATE

OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

Responsive to communication(s) filed on _____

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

Claim(s) 1-12 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

_____ is/are rejected.

Claim(s) 1-12 is/are objected to.

Claim(s) _____ are subject to restriction or election requirement

Application Papers

The proposed drawing correction, filed on _____ is approved disapproved.

The drawing(s) filed on _____ is/are objected to by the Examiner

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All Some* None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. _____.

Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

Notice of Reference(s) Cited, PTO-892

Notice of Draftsperson's Patent Drawing Review, PTO-948

Interview Summary, PTO-413

Notice of Informal Patent Application, PTO-152

Other _____

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 7 are rejected under 35 U.S.C. § 102(b) as being anticipated by Lee U.S. 5,864,260.

Figs. 3 and 4 of Lee disclose a monolithic surface acoustic wave (SAW) duplexer comprising: a piezoelectric substrate 100; a transmitting filter 120 and a receiving filter 160 both formed on the piezoelectric substrate 100 (see col. 3, lns. 38-41); a transmitting branching line 130 formed on the piezoelectric substrate 100 (col. 3, lns. 41-43); and a receiving branching line 150 including the line from input/output pad 40, the band pass filter 150 and the line from band pass filter 150 to receiving filter 160 all formed on the piezoelectric substrate 100 (see also Fig. 6C).

Regarding claim 7, the antenna can be seen in Figs. 3 and 4, and the transmitting filter is connected to a power amplifier (see col. 3, lns. 54-55).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 5-7, 11 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over

Watanabe et al. JP 7-38376 in view of Onishi et al. JP 4-369111.

Fig. 1 of Watanabe et al. discloses a SAW duplexer comprising: a receiving filter 7 (see the abstract, the last nine lines thereof); a transmitting filter 10; a receiving branching line formed by inductors 3 and 4 and bond wire 22 (see also Fig. 5); and a transmitting branching line formed by inductors 11 and 12 and a bond wire similar to element 22 in Fig. 5; and wherein the receiving filter 7 and the receiving branching line inductors are shown in Fig. 5 as being formed on the same piezoelectric substrate 18, wherein the transmitting filter and transmitting branching line are formed of a similar structure on a different piezoelectric substrate (not shown). It should be noted that any transmission line part (i.e. inductors or bond wires) connecting the filter to the node where the transmitting and receiving signals join, is considered to be a part of the "branching

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“line” of the corresponding transmitting or receiving filter. Regarding claim 7, see the antenna and connections in Fig. 1, and note that the Examiner takes Official Notice that a power amplifier would have been well known to be obviously required to be connected to the transmitting filter in order for the duplexer to function in practical communication devices (see prior art of record as evidence, including, for example, the reference applied in the preceding rejection).

However, Watanabe et al. does not disclose the transmitting filter and branching line being formed on the same piezoelectric substrate 18 with the receiving filter and branching line (Fig. 5).

Onishi et al. discloses that it is advantageous to form SAW transmitting and receiving filters on the same piezoelectric substrate (see the abstract, Ins. 5-11) to provide miniaturization and reduced weight and production cost (see the abstract, Ins. 1-4)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW duplexer of Watanabe et al. (Figs. 1 and 5) by having provided the transmitting filter 10 and branching line (11,12) on the same substrate 18 as the receiving filter 7 and branching line (3,4) because such an obvious modification would have provided the advantageous benefits of reduced size, weight and costs, as suggested by Onishi et al. (see the abstract, Ins. 1-4).

5. Claims 2-4 and 8-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe et al. in view of Onishi et al. as applied to claims 1 and 7 above, and further in view of Ikata et al. U.S. 5,786,738.

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The Watanabe et al./Onishi et al. combination discloses the SAW duplexer as discussed above, except for disclosing the transmitting and/or receiving branching lines having a length adjustable part.

Ikata et al. discloses that it is known to provide length adjustable parts of the transmitting and receiving branching lines (see Fig. 7) in a SAW duplexer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW duplexer of the Watanabe/Onishi combination such that the transmitting and/or receiving branching lines (3,4,11,12 in Fig. 1) would have had a length adjustable part such as taught, for example, by Ikata et al. (see Fig. 7), because such an obvious modification would have provided the well known advantage of adjustability which Ikata et al. suggests is an art recognized need (see Fig. 7 and the discussion thereof).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bergmann et al. U.S. 6,313,715 and WO 98/51010 disclose forming all of the transmitting (TX) SAW filter and branching line and the receiving (RX) SAW filter and branching line on the same piezoelectric substrate chip 1 (see Fig. 2 and col. 4, lns. 45-51).

Komazaki et al. U.S. 6,222,426 discloses forming all of the TX SAW filter 140 (Fig. 1) and branching line 120 and the RX SAW filter 150 and branching line 130 on the same

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piezoelectric substrate chip 100, wherein the branching lines are formed with SAW resonators (see Fig. 2).

UU et al. JP 3-297211 discloses that it is known to use branching lines with SAW filters both formed on the same piezoelectric substrate (see Figs. 1 and 2).

Ikata et al. U.S. 6,380,823 discloses that it is well known to form both the TX and RX SAW filters on the same piezoelectric substrate (see Figs. 6 and 32), and provides evidence of the need for power amplifiers for transmitting (see Fig. 7).

Ikada U.S. 5,966,060 discloses both SAW filters for TX and RX formed on the same piezoelectric substrate (see Figs. 3 and 7), and discloses the use of bond wires as inductors at the filter inputs and outputs (see Figs. 1, 3 and 11).

Kuroda U.S. 6,366,179 (Figs. 1-3) and Yoshikawa U.S. 6,424,240 (Figs. 1 and 3) provide further evidence that it is known to provide both TX and RX SAW filters on the same substrate.

Ushiroku U.S. 5,999,069 provides evidence that it is known to take into account the bond wire inductance at filter inputs and outputs (see 29a and 29b in Figs. 5, 6 and 8).

7. Any inquiry concerning this communication should be directed to Barbara Summons at telephone number (703) 308-4947, FAX no. (703) 308-7724, receptionist's no. (703) 308-0956, Supervisory Examiner Bob Pascal (703) 308-4909.



Barbara Summons
Patent Examiner
Art Unit 2817

bs
March 3, 2003